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ABSTRACT

This report discusses the findings of a study that tested the effectiveness of a program that used music to increase the articulation skills of three females and seven males (ages 12-21) with profound mental retardation. Level one of the treatment began with the teacher humming the target word while tapping the rhythm on the hand drum or strumming it on the guitar. Next, both student and teacher hummed and tapped. Finally, the student hummed as the teacher and student tapped rhythms. As soon as the student became comfortable and cooperative with this system, both moved on to level two. At level two, the actual word was added to the other actions. It was proposed that the student progress from listening to unison performance and then to the independent vocalizing of the subject. All students progressed to unison performance and some to independent vocalizing. The 30-minute treatments were given as part of the regular music sessions held twice a week. The program resulted in the improvement of articulation skills and an overall increase in self-confidence. Appendices include a Speech Research Survey, an Articulation Data Sheet, Compilations of Raw Data, and a parent permission form. (Contains 27 references.) (CR)

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ED 419 338

USING SONG TO INCREASE THE ARTICULATION SKILLS IN THE SPEECH OF THE PROFOUNDLY MENTALLY HANDICAPPED

by

Virginia Detzner

A final Report submitted to the faculty of the Fischler Center for the Advancement of Education of Nova Southeastern University in partial fulfillment of the requirements for the degree of Master of Science

An abstract of this report may be placed in the University database system for reference.

1997/October

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Abstract

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This program was implemented to increase the articulation skills of profoundly mentally handicapped children in a public school setting. The objectives for the program were that the target group would decrease individual articulation errors by 30%, demonstrate a 20% improvement in communication using speech, and demonstrate an increase in self-confidence. The target group was required to speak with or in imitation of the teacher. Additionally, the students were required to play the rhythm of the words using a musical instrument. The articulation errors decreased by a dramatic amount and self-confidence increased. The improvement in the use of speech was close to the proposed percentage. Appendixes include a Speech Research Survey, an Articulation Data Sheet, Compilations of Raw Data, and a parent permission form.

Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. When it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of others in the field and in the hope that my own work, presented here, will earn similar respect.

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Student's name Virginia Detzner Completion date 6/6/97

Project site Neva King Cooper Education Center

Mentor's name Mr. Bryan H. Kleiman Bryan H. Kleiman
print *signature*

Mentor's position at the site Principal Phone # 305-255-3584/h

Comment on impact of the project (handwritten):

Project made not only a positive impact within the program but also school-wide. I highly commend this candidate's efforts and endorse her efforts on behalf of the school.

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CHAPTER I

Purpose

The facility was a public school specifically designed for the profoundly mentally handicapped children. The designation or label identifying the students' disabilities was that determined by the county guidelines for this designation. The students ranged in age from three to twenty-one years.

Due in part to the rubric designed to identify these students, the population varied more than would have been expected. The compilation of both intelligence and level and skill of adaptive behaviors led to a population with a variety of abilities and personalities. Taking their identification strictly from intelligence quotients would have led some individuals to attain the label of trainable. In other cases, a more descriptive title would have been multiply handicapped.

The majority of the teaching staff was certified to teach the mentally handicapped with many also having held certification in varying exceptionalities. Of the staff of 19 teachers, 10 held master's degrees. Previous experience working in residential facilities was not uncommon for both teachers and paraprofessionals. In addition to the regular classroom instruction, special area subjects were also offered. These included music/music therapy, art, daily living skills and physical education, which included a pool program.

Another subject offered was a prevocational curriculum held in conjunction with the regular classroom teachers and the prevocational teacher. This program was meant to be a part of each student's regular curriculum. For the older and more mature students,

there was a vocational program developed in the manner of community based instruction. This began with training at the school site and lead to work in the community, not in a sheltered workshop.

The staff included a full-time occupational therapist and physical therapist assistant. Additional part time therapists were also employed. The speech therapist was part time. Two nurses were employed and their work encompassed asthma treatments, tube feedings, and other medical necessities. A psychologist visited the campus once a week and various other professionals worked at this facility on a regular basis through the pre-kindergarten program.

Students lived in residential facilities, smaller group homes or with family members. The socio-economic status of the students varied greatly. The students and their families may have been subsisting on government funding, living at a middle class level, or were benefiting from a strong financial status. Parental or careworker involvement was encouraged. This was especially true in the pre-kindergarten classes. Parents and careworkers were encouraged to become involved in everything including representation at school management meetings, the Parent Teacher Association meetings, and attendance on award days such as student of the month. Also involved in the school were middle school aged student volunteers.

The school had a small population of approximately 100 students. The teacher-pupil ratio was 8:1 and each classroom had both a teacher and a paraprofessional. In some classrooms, due to the amount of lifting of students during toileting, there were sometimes and additional paraprofessional for part or all of the day. The class size and

the school population were growing during this school year by the addition of one to two students each month.

Despite this growth, the school was limited to receiving the services of a speech therapist every other week. The total number of students receiving speech was limited to 20 with only one of those students able to speak words. The remainder of the students who used speech with difficulty did not qualify. Details of this have been presented below.

The writer was a music therapist, board certified and a music teacher certified in the state of Florida. In addition, this professional was in the process of obtaining certification to teach the mentally handicapped. This additional certification was obtained following implementation of the study. When this professional worked with the students, techniques of both teaching and music therapy were used on a daily basis. The use of music to achieve nonmusical goals dovetailed nicely with the small step curriculum developed at this site for the education of the profound. The music lessons involved the emphases on teaching rhythm in a musical sense and to organize the neural chemical pathways in the brain. The musical emphasis was on vocalizing and singing. The latter included, as always, an emphasis on correct choral diction.

The writer was to correct the students' diction and to work with the rhythms that naturally flow in correct articulation. The teacher's use of musical instruments strengthened the process by adding kinesthetic learning. Also, the writer chose specific instruments for their adaptability to handicapping conditions and for the incentive value of often-requested instruments.

All of those students, except one, with the ability to say words did not qualify for speech therapy. The guidelines determined by the County for the profoundly mentally handicapped were quite restricting so that those with the most speech did not qualify for speech therapy. The need continued to exist, however, for students to communicate well either at school or in their homes. Secondly, it was imperative that communication, especially speech be encouraged in various different settings throughout the day.

Although the profound always needed to have supervision, it was a reality that our country's job force was quite mobile. Therefore, these individuals needed to be able to communicate with each of their caretakers, whether their history with these students was long or quite short. Good communication included the ability to interact and make wants and needs apparent. The better the quality of communication the fewer poor behaviors that arose out of frustrations.

Knowing this, the fact that out of the 22 students with the ability to speak, only one received speech therapy. This condition pointed to a need for further intervention services beyond that offered by each classroom teacher. For the purposes of this study, speech was defined as the use of words spoken in English. This speech was observed during music sessions, at arrival and departure times, and during the school wide activities held most Fridays. In addition, teachers were asked to identify the attempts to speak during classroom activities.

Since only one speech therapist was working at the site part time, adding sessions with students who did not meet assessment guidelines was not possible. The hours of service time were quite limited and since these students did not fit the guidelines, the

County was not likely to increase speech therapy time for the benefit of this sub-category of students.

Teachers had expressed frustration over the lack of support available to them so they could provide encouragement to those students who were beginning to talk. Most teachers did not have the technical training in the development of speech needed. Without this training, students could not be taught correct diction with clear articulation and enunciation.

The assessment materials that were used at this facility were drawn from A Resource Manual for the Development and Evaluation of Special Programs for Exceptional Students, Volume IV-I. The Florida Department of Education has very specific guidelines for determining which profoundly mentally handicapped students were eligible for speech therapy services. The Manual divided the guidelines into three levels. These were identified as "eligibility for direct services ... indirect services, which include consultations with parents/staff/teachers; no services," (Florida Department of Education, 1995, p. 419). The seven critical factors that were a part of the "Communicative Potential Profile" were assessed and given points, in the areas of chronological age. Those 15-21 years received 0 points, 10-15 years were allotted 5, those 8-10 years counted as 10, and those 0-8 years were assigned 15. These were so weighted "in light of research which supports early intervention and the 'critical' learning period from birth to 8 years of age" (Florida Department of Education, p. 421).

The next factor was the Mean Length of Utterance (MLU) of morphemes. According to Bernstein and Tiegerman (1993), a morpheme was the smallest linguistic unit with meaning. From a language sample of at least 50 utterances, they wrote, "the

mean length of utterance should then be transferred to the profile (Florida Department of Education, p. 421)".

The next category was the "Receptive/Expressive Language Gap" in which a list was provided of possible assessment instruments. As it was stated in the Florida Department of Education (p. 422), "Older students whose ages place them beyond the norms of a test can be assigned scores based on their mental age (MA)." This was noted under 'comments'.

The category entitled "Communicative Intentions and Discourse Skills" was completed using a checklist. Scoring was compiled through the observation of either prelinguistic or linguistic intentions to communicate. Items were scored with either a + or - with notations of level of ability noted in the comments section. The Manual stated, "Students who exhibit all 11 communicative intentions and three/five discourse skills will receive a rating of '0'. Like wise, students who are observed to have fewer than 11 communication intentions, are assigned a rating of '15', indicating the greatest need (Florida Department of Education, p. 425)."

The Communicative Potential Profile then lists two factors which affect the possibility of successful therapy but were not a part of the point system rubric. These were the "Intelligibility of Speech" and the "Extent of Previous Therapy". The first noted four categories ranging from the presence of functional speech (and articulation skills) down to a level requiring the use of augmentative communication. The second merely listed the years of previous treatments, ranging from 10+ years down to no previous therapy. These factors evidently influenced the final decision for eligibility for speech therapy with the school system.

The "Expected Responses to School Based Therapy" was determined through the use of a questionnaire. The results were scored, with 15 points to the students needing therapy to function, 10 for those already receiving indirect intervention. Five points were assigned to those presently receiving therapy but could not function without it. Zero points were given to those students who were able to communicate in a functional manner.

The final category was the "Priority of School Therapy Needs" as determined by an interdisciplinary team. Fifteen points were given to those for whom intervention was essential. Ten points were assigned to those who needed specific intervention that was secondary to other needs. Once again those already receiving therapy were given five points. No points were given to those students who were able to function within their environment.

The final scores of nine to fifteen points determined the need for direct intervention. That of three to eight points lead to consultations with teachers and/or parents. Three or less points resulted in no therapy being provided.

This assessment procedure was obviously weighted against the profound student whose speech was difficult to understand. Those were the students whose caretakers needed to be especially meticulous in using listening skills. For those students with poor articulation and frequent phonation errors, the daily frustration levels for both students and careworkers were high.

It was also obvious that for the older students, speech intervention became a low priority. From the teenage years and older, the emphasis changed to vocational skills. Since the need to develop whatever self-help skills were possible, the school day did not

allow for much classroom intervention on this subcategory of communication. Articulation, although a smaller part of the regular classroom lessons, was still a factor in the music classes. In fact, at the stage in which a student develops speech, the greatest amount of focus in music classes was on choral diction.

The target group included profoundly mentally handicapped students from kindergarten through the final year of school. This included students from five through 21 years of age. (Students who turned 21 during the school year or summer school were allowed to complete that school year.) Given little or no outside structure, the students exhibited poor adaptive behavior skills. With this specific group, seizures were common and the use of seizure medication affected all levels of motor skills. Thus difficulties were evident with the fine motor skills that were needed for good, clear articulation.

Additional diagnoses of individuals involved in the study were varied. One student was diagnosed with apraxia that by definition affected expressive language. Two evidenced higher cognitive skills in comparison with the other subjects while Cerebral Palsy affected some motor skills. Most subjects were ambulatory with problems in gait while one was wheelchair bound.

In the population of students who were profoundly mentally handicapped, the appearance of speech was often late and inaccurate. The focus of this study was to help students improve the clarity of their speech and, in doing so, to increase the ease of communication. Each individual had different abilities and disorders in this area and so the individualization of the outcome objectives was warranted.

The primary proposed objective was that over a period of 12 weeks, the target group would decrease individual articulation errors by 30% as shown by the Sounds-in-

Words Subtest of the Goldman-Fristoe Test of Articulation (Goldman and Fristoe, 1972). The treatments proceeded, where possible, through four levels. The first two required the student to speak with, or in imitation of, the teacher. Ten students were expected to progress completely through one of these levels. The remaining treatment levels required more independent speech.

The next objective stated that over a period of 12 weeks, the target group would demonstrate a 20% improvement in communication using speech as measured through the observations of the classroom teachers. This was indicated by items one through three of the Speech Research Survey (Appendix A). The classroom teachers were asked to observe and note the clarity of the student's speech. The frequency of speech in responding to questions was assessed. The frequency of speech that was spontaneous was also assessed. The third objective stated that over a period of 12 weeks, the target group would demonstrate an increase in self-confidence as indicated by item four of the same Speech Research Survey (Appendix A). Increased eye contact with the listener and improved posture were the determinants of increased self-confidence.

CHAPTER II

Research and Planned Solution Strategy

To begin with any research, the population had to be clearly defined. The diagnostic criteria that was set by the "American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition" (1994) (DSM-IV) for mental retardation included three requirements. These were "significantly subaverage intellectual functioning...Concurrent deficits or impairments in present adaptive functioning...and onset is before age 18 years" (American Psychiatric Association, 1994, p. 46). In addition, the intelligence quotient was below 20 or 25.

The County guidelines for profoundly mentally handicapped students set the "criteria for eligibility for a special program for profoundly mentally handicapped...as follows: The measured level of general intellectual functioning is two (2) or more standard deviations below the mean and generally falls below five (5) standard deviations below the mean. Functioning shows consistent subaverage performance in a majority of the areas evaluated. The assessed level of the student's behavior is below that of other students of the same age and socio-cultural group" (Dade County Public Schools, 1995, p. 58). (Part III. Procedures for Specific Programs – Continued: Programs for Profoundly Mentally Handicapped, 1995). The County guidelines also mentioned the ages served as three through 21 years.

Many students identified as profoundly mentally handicapped had dual and even multiple diagnoses that may have affected their speech. Among these were autism, cerebral palsy, apraxia and Down syndrome. Sommers et al. (1988) investigated the speech of two groups of Down syndrome speakers. The total group consisted of 45 individuals. In a discussion of phonological skills, comparisons were made of those participants ages 17-22 and 13-17. The patterns of errors were very much alike for both with some errors occurring less often for the younger (and previously treated) group.

According to Beirne-Smith, Patton and Ittenbach, "This population is highly diverse in communication skills. Some students speak, some do not. Those who speak may do so in single words, short phrases, whole sentences, or rather complex conversations. Many individuals who can speak have articulation difficulties that make inexperienced listeners unable to understand them" (1994, p. 253).

A similar range of communication skills was the focus of research by Wetherby et al. (1988). Fifteen children were involved in this study of three stages of speech development from the prelinguistic, to single word utterances to the multiword stage. It was concluded that the use of gestures decreases as speech increases. This could have had a significant impact on students afflicted with cerebral palsy whose impairments deter or prevent such gestures.

As the cognitive and other related skills of the profoundly mentally handicapped are often compared to those of normal toddlers, data on normal early speech development must be understood. Vihman and Greenlee (1987) studied

some differences in the development of one and three year olds. Learning styles at both ages were easily recognized, phonetic tendencies at age one were not predictive of skills at age three, and the consonant use at age one was somewhat predictive of advances in phonology at age three. Thus an analysis of forthcoming speech may have assisted the professional in identifying future candidates for treatment. This could have been used as a predictor for assessing those whose speech was still at the babbling stage, regardless of what biological age the prelinguistic sounds emerge. Articulation difficulties could then be treated during the time of emerging speech.

Articulation was defined as the production of speech sounds. It made speech intelligible to the listener, whether the sounds were a part of conversation or song. Although, in the later, it would have been called choral diction, the effect was the same. As Bernstein and Tiegerman stated (1993, p. 5), "phonology is the system of rules that govern sounds and their combination. Each language has specific sounds, or phonemes, that are characteristic of that language". The rules that have governed choral diction were similar and often identical to that of speech.

Hodson (1994, p. 2) compiled research to "provide a framework for consideration of the possible impact of a disordered phonological system". This compilation of research analyzed factors involved in the identification of these impairments and how the specific disorders affect the individual's ability to become articulate. In analyzing some deterrents to becoming articulate, it was presented that a more adverse affect is achieved by combining several less severe

factors than that resulting from a single severe factor. Thus the students requiring the assistance of multiple interventions were at greater risk than those with a single, if severe hearing loss were. As Hodson (1994, p. 3) said, "an area of language that also must be considered – but one that is often overlooked – is phonology, expressive as well as receptive". It has been traditional that there is "no differentiation in the norms for a sound being produced adequately although not perfectly" (Hodson, 1994, p. 6). "Activities designed to directly and specifically facilitate underlying phonological awareness abilities, however, have not been routinely incorporated in intervention sessions for preliterate children" (Hodson, 1994, p. 13).

The use of speech perception training was researched by Rvachew (1994) with a focus on the "sh" or "not sh" sounds. Twenty-seven youngsters' ages 42 to 66 months were randomly assigned to three groups. The groups were exposed to recorded stimuli of words with similar endings (group 1), words with opposite endings (group 2), and words not related to "sh" in any regard (group 3). In addition to this, the students were given sound production training. The results showed progress in these subjects with delayed phonological development. According to Rvachew (1994, p. 355), "in summary, this study demonstrates that interpersonal speech perception training can facilitate sound production learning".

Fey et al (1994) studied the relationship of poor performance in both speech and grammar. The 26 subjects were evaluated to determine if the indirect result of instruction in expressive grammar would affect phonological production. Fey et al (1994, p. 596). Said "to make a change in grammar or phonology, the

child must recognize that the output generated by her or his existing system differs from that of the ambient environment... It may be that some children's language difficulties lie in... recognizing the differences between their own output and that of the language of competent individuals in their environment". As a result of the study it was recommended that both areas of difficulty be treated directly. Not enough indirect affect was noted to correct significant errors (Fey et al, 1994).

Tyler, Figurski and Langsdale (1993, p. 746) said that some children with phonological impairment "sometimes display an acoustically measurable, but auditorily imperceptible, difference between seemingly identical phonemes... However, such distinctions do not reach the perceptual boundary necessary for the adult listener to assign the sound to the target phonemic category". This study of seven children was developed to analyze the seemingly imperceptible differences among word pairs that appeared to be identical in pronunciation. Tyler, Figurski and Langsdale (1993, p. 746) then stated that "the presence of acoustic distinctions has been taken as evidence that the child's knowledge of the sound system is more sophisticated than would have been assumed based solely on a transcriptional analysis of the child's speech". Thus two types of knowledge were analyzed in this study. In addition to the obvious productive knowledge, the subjects possessed perceptual knowledge with an understanding of the correct voicings. Those subjects, who were able to identify correct pronunciation in the speech of others, were not necessarily able to produce correct speech. Unfortunately, the ability to hear correct placement did not

increase the likelihood of a faster acquisition of the correct pronunciation (Tyler, Figurski & Landsdale, 1993). In view of this research, a profound student would not be required to identify the elements of correct speech before learning correct pronunciation.

Kelly and Dale (1989) studied the relationship between early language and cognition in 20 children. The language skills of these children, aged 12 to 24 months, were in the normal range. This range of 12 to 24 months was similar to cognitive scores of the profoundly mentally handicapped. A high correlation was found between the cognitive skill advances in play, imitation and means-end abilities and specific language skills. Specifically, those moving from single words to more complicated speech differed significantly in imitation and play. Imitation skills were found essential in language development. This imitative learning style has been used to reinforce concepts presented to the profoundly mentally handicapped.

In a study of 47 children, an investigation of the correlation between such factors as cognitive, motor and linguistic skills was made with the supposition that the level of skill development of the first two could determine the level of the last. In other words, could the results of the assessments of motor and cognitive skill have lead to a prediction of speech impairment and predicted the severity of articulation disorders? The 47 children presented as the subjects were previously diagnosed as mentally handicapped at the mild level. Two neurodevelopmental tests were used in the assessments along with a test for linguistic skills. Chronological and mental age, along with intelligence level did not predict

articulation disorders. Among the areas that were successful predictors were fine motor skill deficiencies and social economic class. As for predictability of the severity of articulation disorders, the most successful were fine motor skills. (Sommers, Sebastian-Hall, & Knapp-Oplinger, 1995). Although this study focused on the mildly retarded, it was obvious that difficulties with fine motor skills could also be a predictor of articulation disorders. Certainly, a lack of motor control would affect the use of the facial area whatever level of intelligence the student may possess.

In those students with severe fine motor control, the comprehension of some speech would be dependent upon the ability of the listener to comprehend the speaker. Should articulation have been particularly garbled, the speaker's ability to exhibit communicative intent would have added greatly to the listeners' comprehension. The communication, which included behaviors such as gestures, added to the, sometimes, unclear speech would have been recognized as vital to the increase of clear communication.

Ogletree, Wetherby, and Westling (1992) investigated the prelinguistic behaviors of 10 children diagnosed as profoundly mentally handicapped. Among other questions, these authors questioned what specific acts were performed to communicate and how these acts or gestures compared to those of normal prelinguistic children in content and consistency. Unlike previous research, these subjects were from noninstitutionalized homes so the final question involved a comparison of these subjects and those from studies in institutions. The gestures and acts were found to mainly regulate behavior. Initiating communication was

primary, gestures were mostly isolated, and vocalizations were unclear to the listener. It was felt that sampling was more likely to be successful from the regulation of behavior or perhaps that this was part of the normal sequence of development. Finally, it was felt that these subjects had more opportunities to regulate their own behaviors than to direct attention to or request information from others.

It was imperative in teaching the profoundly mentally handicapped, that the most efficient methods be utilized. This was especially essential to encourage learning and the transferring of knowledge to other settings. Analog teaching was an approach that included trials in controlled settings that concentrated on discrimination and then on the identification of materials. Natural teaching of language occurred as an aside to the training of appropriate use of different materials. It was almost coincidental in the curriculum and often was student initiated. The teachers modeled and reinforced but did not initiate or structure lessons.

Elliott, Hall, and Soper (1991) chose to directly compare and contrast analog and natural teaching. The 23 subjects were identified with a dual diagnosis of autism and severe to profound mental retardation. Analog teaching focused attention on specific tasks. Natural teaching allowed for the rehearsal of language in typical daily settings. Analysis of statistical results was found to reveal no significant advantage to either of the teaching methods. However, they found that "those functioning in the profound range of mental retardation tended to perform

better when natural language teaching was followed by analog language teaching" (Elliott, Hall, & Soper, 1991, p. 444).

In another study using a naturalistic learning classroom, Metz (1989) studied 69 preschoolers' free-choice movement responses to music. These children with behaviors and intellectual levels similar to the profound were observed in their physical reactions to music. The final review of results led to three categories of movement and the development of seven propositions regarding the children's reactions. One of these discussed the effect of developmental change and with it, the use of modeling to develop positive attitudes to the rhythms presented.

Since learning was successful in natural teaching, the teaching of speech and specifically the emphasis on clear articulation in the natural setting of the music classroom had a possibility of great success. The profoundly mentally handicapped student needed continual reinforcement of whatever concepts were taught. There was a constant need for teaching skills, reinforcing the learning of skills and teaching the transfer of basic skills to other settings. In order to encourage clear and articulate speech, there was constant reinforcement. This was fairly straightforward but in the area of speech and in particular articulation, someone with specific training needed to be found to help influence the skill acquisition.

Of course, the speech therapist had the expertise but it has already been established that this subgroup did not qualify for speech therapy. Diction and articulation was also an area of expertise of many music teachers. Vocal training

was developed to influence the singer/conductor's ability to articulate clearly. Although many particulars differed, the overall objectives were the same. The listener had to be able to comprehend and communicate with the speaker.

In Fisher's study (1991) of choral diction, three high school choirs were given treatments developed from a systematic method for teaching English diction. The insistence on correct choral music diction had two essential functions. The first was the need to present the message of the text or lyrics. The second was the emphasis on the overall tonal qualities of the music. This was developed through the use of various vowel colors and different consonant articulations. Previous methods used were not consistent and often were based on traditions that might have resulted in good or bad diction. Personal considerations such as preference of conducting style, rather than on any sort of scientific method was the norm and inconsistency was not unknown.

The author's purpose for this study was to create, implement, and to evaluate a structured and standardized system for the teaching and practice of English choral diction. Fisher's focus was on singers at secondary school level and older. The method used came to be known as the Articulatory Diction Development Method (ADDM). Some of the objectives of ADDM were to guide the singers to learn a kinesthetic feel for accurate articulation and to increase the singers' intelligibility within the ensemble. As with any good research, certain specifications were also set. The flexibility of this method as it was used in each of the rehearsals, the clear concise instructions for the implementation and the

graduated exercises from simple to complex were a few that may also apply to using ADDM with other populations such as the mentally handicapped.

Three choirs were used in the exercises, each with a different previous diction practice. A recording of each was made prior to the study and a follow up recording was made following the enactment of the research method. The posttraining tapes consistently were found to be statistically significant in terms of intelligibility of text. The degree of improvement did vary among the choirs but of course, each choir varied in each performance. This, in fact, was the reason for no control group. Control groups should have been nearly identical to the experimental groups and it would be impossible to locate two choirs with nearly identical diction problems.

Trusler and Ehret (1960) developed a series of lessons that also focused on increasing diction and articulation in song. Intelligibility of text was emphasized here in the solo singer. In addition to vocal (singing) exercises and vocal music drawn from traditional music literature, they added exercises composed of words and complete sentences to be read slowly aloud.

It was common in choir rehearsals to "spend some time on diction – focus on a specific problem; for example, a hissing final 's', and work to improve it" (Phillips, 1994, p. 62). His techniques included focusing on these elements of the production and quality of vowel and consonant use. The difference in his work was the need to emphasize diction in the specific choral pieces only.

The treatment process has become one of combining the emphasis on the articulation skills used in speech and those used in song. How would a classroom

teacher use a professional knowledge of basic speech production and vocal choral techniques in conjunction with the demands of a curriculum for the profoundly mentally handicapped? The answer may have been found in a therapy technique drawn from the work of speech therapists with some music training in their educational background. Socarraz (1997), who was a speech therapist with 14 years of experience in working with the target population, recommended the use of melodic intonation therapy. Although no systematic study was done, this therapist found it to be successful.

Creaghead, Newman and Secord (1989) presented this therapy, which although lacking the specific number of patients, was found to be successful with patients who had very limited clearly articulated speech but who did have the receptive skills necessary for auditory processing. Each client was asked to sing words or phrases within certain strict musical boundaries. These boundaries included very controlled melodic and rhythmic patterns that resembled the actual patterns used in speech. Thus, melody lines from composed melodies were not used. These could have brought confusion to the client as remembered lyrics might have conflicted with the intended wordings of the phrases. Their interpretation of this therapy technique added the gestural communication. This was either developed out of a sort of body language of commonly known gestures or as adaptations of American Sign Language. In their research, the addition of gestures, augmentative communication aids and writing were considered when appropriate to the specific client.

Sparks and Deck (1986, p. 321) felt that an "emphasis is placed on auditory comprehension, several aspects of verbal expression, and nonlanguage behavior". A type of singing was used since ancient times, which could have related to this type of therapy. Each intoned statement was based upon a specific melodic pattern, the specific rhythms of the spoken models and the points of stress in the spoken pieces. The client recommended for MIT was one with strong auditory imitation skills.

The interest of the client in correcting speech was noted as essential. In fact, the desire to change and/or modify one`s speech was developed as an essential part of this therapy. Among the communication aspects could be a frustration with the inability to communicate using speech. Clients' speech included poor articulation but attempts to communicate were common. The nonlanguage behavior included frustration with the inability to have meaningful conversations.

This therapy technique included a limited vocal range, which was similar to that of speech. It was a range comfortable for those untrained voices. The basis for MIT required the tempo of the utterances to be that closest to speech instead of song. The variety of pitch was in constant change and mainly used in conjunction with the count of whole notes. Finally, particular rhythms and points of stress were exaggerated using volume and pitch for emphasis. Allowances were made for regional dialects. It was recommended that no other language therapies directed towards increasing verbal output be used during the treatment period (Sparks & Deck, 1986).

Persellin (1992) studied the learning modalities of aural, visual and kinesthetic as these related to short-term recall of different patterns of rhythm. Most important to the present research was the question of how maturation affected this recall. Each of 210 children was asked to clap rhythms presented in one of the three teaching methods. The most important factor in recalling rhythms was grade level; first graders' abilities to learn visual presentations were significantly lower than those in the other (higher) grades. It was stated that the younger children became frustrated with only visual clues and needed to hear and/or feel the rhythmic patterns.

Connell (1987) compared the use of imitation and modeling in research that dealt with teaching procedures used with 40 normal learners versus that of 40 children with specific language impairments. The results indicated a higher success rate when using imitation with the language impaired and more successful learning with normal learners through modeling. It appeared that the language impaired required the actual practice used in imitation. Certainly, the many areas of impairment seen in the profound included those of language and this population had a constant need for the repetitive learning.

Incorporating the strategies of speech and language therapists into the classroom of exceptional students enhanced the curriculum. The strategies they developed became a format to allow students to readily acquire and generalize the use of those skills. The real-life chances to practice target sounds were encouraged through the use of both formal reinforcement and informal praise.

These classroom experiences were shaped and molded by the teacher's arrangement of the physical environment and redirection of behaviors. The specific techniques were amassed with the knowledge that the teacher was the ultimate model of correct communication and well-articulated speech. Although the techniques presented were not new to the profession, the importance of reinforcing speech and language throughout the day was essential to the students' success (Green, 1994).

Intervention Strategies Drawn from the Research Literature

Intervention strategies drawn from these research projects were derived from speech therapy (those focusing on articulation skills), exceptional education, and music (techniques of choral conducting). The strategy taken from speech therapy, to encourage clear enunciation, was the reinforcement of listening skills. As in the research by Rvachew (1994), this author exposed the students to correct pronunciation.

The next set of strategies was drawn from research in exceptional education. The first used the techniques of imitation and modeling. As Kelly and Dale (1989) found imitation was an essential part of learning and this was particularly true in the development of speech. The second used the natural environment of the music classroom to encourage the practice of clarity in speech. Elliott, Hall and Soper (1991) felt the profoundly mentally handicapped learned more easily if analog teaching followed natural teaching. So along with practice in music class, the students were required to continue the precise naming of specific terms.

The strategy drawn from music was developed from research in choral conducting and singing. Fisher (1991) incorporated a kinesthetic feel for articulation. To utilize the kinesthetic approach words were repeated or spoken while drumming the rhythms or strumming them on guitar. Persellin (1992) found short-term recall of patterns of rhythm was strongest if the subjects could hear and feel the rhythms. From this research came the practice of using musical instruments to perform the rhythms inherent in language

The final strategy and actually a treatment process combined knowledge from speech therapy and music. Creaghead, Newman and Secord (1989) presented the details of this melodic intonation therapy. Their work detailed the need for controlled melodic and rhythmic patterns resembling the normal speech patterns. Their interpretation added gestures and augmentative communication aids. The gestures of their study were reinterpreted into drumming hand drums or strumming the guitar. The melodic patterns and rhythms were used in a manner similar to that of Sparks and Deck (1986). These researchers focused on vocal ranges and rhythms closest to that of language instead of the greater varieties used in music.

Planned Solution Strategy

The population of this target group was identified as the mentally handicapped at the profound level. This designation was determined following the guidelines set by the county of residence. There was a diversity of communication skills as previously noted (Beirne-Smith, Patton, & Ittenbach, 1994). The specific

group targeted was those with speech that might have been unintelligible to any inexperienced listeners.

The inability to enunciate clearly and therefore communicate freely was the basis behind this research. Since the inability to produce specific phonemes was accompanied with the unusual body language of this population, the ability of these students to communicate was greatly affected. Poor speech was just one of the factors limiting communication. The low intelligence level and poor adaptive behavior skills combined to form a more diverse effect than either single difficulty. This group needed multiple interventions to achieve an independence level of even a minimal level. Interventions were needed both in teaching preacademic and academic skills. Also, these interventions were often restricted due to the students' poor adaptive behaviors. This often led to high levels of frustration on the part of both teachers and students.

The target population did not qualify for the services of the speech therapist. One of the critical factors that affected this assessment was the instruments that were created with the belief that the benefits of speech therapy were most effective in the earliest years of life. The ironic result of this was that most of the profound students with speech did not qualify for treatments. Thus, the classroom teachers were left to encourage good articulation as an aside to their classroom subjects. The result was that the students were given daily practice that depended upon the teacher's abilities to review and correct the student's diction. The problems resided in the lack of teacher training in the specifics of articulation. Although a single course in language development and learning was

a part of the newest educational requirements of those certified to work with the mentally handicapped, no additional training was required on factors such as correct placement for vowel and consonant production.

Training to assist students to produce clear and coherent vocal production is, however, a part of the curriculum in music. The required vocal techniques training specifically emphasized improving the students' diction. Time was spent on developing sounds that resulted in easily understood lyrics and words. In addition, the required conducting classes and memberships in choruses and/or choirs provided additional training in this area.

The combination of vocal training and education in teaching mentally handicapped students led to a focus on melodic intonation therapy. This therapy involved a number of factors that made it more conducive to this population. The use of both auditory and kinesthetic learning provided reinforcement of newly learned concepts. Sparks and Deck (1986) insisted that print for visual aids was to be avoided as it provided a distraction. Thus the difficulty of low reading skills did not infringe on the treatment.

Strategies drawn from the melodic intonation therapy used by speech therapists and those drawn from vocal techniques classes in music education was applied to this group of profoundly mentally handicapped students. These have been used with some success with other populations and were applied to this. These strategies were applied to supplement the general lack of available research on this population.

Modifications needed with this target group included the use of phrases already a part of the students' vocabulary. The central focus of this study was the clarity of vocabulary already used by the students. Although new vocabulary was encouraged, this new study focused on increasing the intelligibility of currently spoken phrases. Another modification involved the use of a hand drum for aural and kinesthetic teaching modalities and as a motivational device to encourage focus on the task.

CHAPTER III

Method

Tasks

The initial step was to involve the parents and/or caretakers of the students. These individuals were informed of the overall intent of the program and any modifications of the students' days, such as schedule changes. The initial step before implementation of the research was to assess the specific articulation disorders of the individuals. This required a reorganization of the weekly schedule to allow time for the private assessment sessions.

The assessment instrument used to determine each student's specific articulation disorders was the Sounds-in-Words Subtest of the Goldman-Fristoe Test of Articulation. The author administered this Subtest. Questions one through three of the Speech Research Survey were used to determine each student's level of improvement in communication using speech. The classroom teachers completed the Surveys. Question four of the Speech Research Survey was used to determine each student's level of increase in self-confidence. The classroom teachers also completed this portion of the Survey.

The original weekly schedule provided 30 minutes for sessions two times each week with each class. The work with each individual subject occurred at the start of each session. The amount of time involved was determined by the specific

spoken sounds rather than by the clock. The modified schedule involved the suspension of the regular schedule. Time was therefore provided to assess each individual subject. An effort was made to suspend the schedules only of those classroom teachers who had agreed to participate in the study. This same modified schedule was employed for the posttests in week 12.

The next step was the assessment of each student using the Goldman-Fristoe Test of Articulation to determine the areas of difficulty. During week one, the schedule changes occurred, testing was completed, and the initial data on articulation was collected. The test results were then reviewed as a part of the planning process for treatment sessions. The focus on specific vocal productions and the compilation of phonological patterns to be used was developed from the results.

Level one of the treatment began with the teacher humming the word while tapping the rhythm on the hand drum or strumming it on the guitar. Next, both student and teacher hummed and tapped. Finally, the student hummed as the teacher and student tapped rhythms. As soon as the student became comfortable and cooperative with this system, both moved on to level two.

At level two, the actual word or words was added to the other actions. It was proposed that the student progressed from listening to unison performance and then to the independent vocalizing of the subject. All students progressed to unison performance and some to independent vocalizing.

In the proposed final procedure, the teacher was to ask what was said and signal the student to respond. Although not achieved, two additional levels had been proposed. Level three was to begin with the teacher vocalizing and then fading this out. The hand tapping/playing was to cease but the students were to be given hand signals to repeat the word or words. Following this, the teacher was to respond with further questions about the word or phrase with responses from the student. Level four was to encourage maintenance and practice of the phonologically correct speech.

From the onset, it was a possibility with this population that a student could increase in clarity of speech and articulation but not progress beyond level two. Due to behaviors and poor comprehension skills, a subject might not have been able to repeat a specific word but able to increase the clarity of words spoken in unison with the teacher. Since the intent was to correct and perfect diction or articulation, the inability to repeat specific words was not important. The focus was on clarity of speech and dealt with specific articulation skills. There was no emphasis on speaking specific words but rather an emphasis on articulating correctly.

Participants and Materials Needed for the Project

The Participants of the research included three females and seven male students with ages ranging from 12 to 21 years. Although there were originally supposed to be eight males, no permission was given for one of the students to participate in the study. All were able to speak and most were able to say short

phrases. All were students at the same school and received music as a part of their regular weekly schedule. None qualified for speech therapy, however every classroom teacher informally encouraged clarity of speech. The materials needed included musical instruments (a hand drum and guitar), and Articulation Treatment Data Sheets that contained the assembled vocabulary lists customized for individual students. As the author needed to focus both on testing procedures and student behavior during testing, the pre- and posttests were recorded using a Sharp Cassette Recorder Model RD 767A The author later used Califone headphones to transcribe the responses.

Twelve-Week Schedule

The treatments were given as a part of the regular music sessions held twice a week. Each complete session was thirty minutes long and treatments were given at the beginning of each session. This served the purpose of providing other favorite activities to follow as incentives and it ensured that the treatment was given the maximum focus required. Pre- and posttests were given at the start and finish of the treatments during the first and twelfth weeks respectively.

Process for Monitoring

The monitoring of student progress was accomplished through the use of the data collection sheets. Each data sheet contained the student's name, the specific articulation errors to be corrected, the focus of each session, and coded

notations as to the results of each session. These data sheets were completed after each treatment session.

Provisions for Mid-Project Corrections

During week six, the data sheets were reviewed to assess the progress of each student. The data that was reviewed was the improvements noted in specific areas of vocal production, the number of improvements, and the comparison of all subjects' data in both these areas. Upon review, the focus of treatment remained the same with the exception of two individuals. These students had an abundance of articulation skills needing modification and the cognitive skills to work at a faster pace. It was determined that those students would focus on more articulation skills per session than the other subjects would.

CHAPTER IV

Results

As stated in the purpose of this research, two evaluation instruments were used. The first tested the specific articulation disorders and was known as the Sounds-in-Words Subtest of the Goldman-Fristoe Test of Articulation. The second was the Speech Research Survey (Appendix A, p. 48) that demonstrated the level of change in the use of speech as measured in the first three questions. The student's self-confidence as measured by observations of behaviors was mentioned in the final Survey question (Appendix A, p. 48).

The Sounds-in-Words Subtest of the Goldman-Fristoe Test of Articulation was used to ask each student to say the names of the pictures shown. When used as a pretest, the data collection sheets provided were reviewed to identify specific articulation errors. During week 12, the Goldman-Fristoe Subtest was re-administered to determine the specific articulation disorders still remaining. The results of the Goldman-Fristoe Test of Articulation were then reviewed in terms of the changes in each student's speech. Each student's test results were then compared and contrasted in terms of articulation errors and in terms of the elimination of these errors.

The Speech Research Survey (Appendix A, p. 48) was distributed to the target students' teachers at the school, both prior to and upon completion of the treatment period. The four questions of the Survey asked about each student's

clarity of speech, usage of speech (both responses and independent speech), and the observation of behaviors normally associated with self-confidence.

As was stated before, the Goldman-Fristoe was used in conjunction with the primary objective. Questions one through three of the Survey were completed in conjunction with the objective assessing communication in the form of speech. Question four of the Survey was presented to examine the change in the level of self-confidence of each student.

Table 1

Objective 1: Over a Period of 12 Weeks, the Target Group Would Decrease Individual Articulation Errors by 30%

Student	Pretest Errors	Posttest Errors	Percent of Increase/Decrease
A	25	15	40% decrease
B	25	04	84% decrease
C	15	16	06% increase
D	04	03	25% decrease
E	11	01	91% decrease
F	12	06	50% decrease
G	05	04	20% decrease
H	08	02	75% decrease
I	09	04	56% decrease
J	12	05	58% decrease
Total	126	60	

As the reader can see, objective number one was met since the goal of a 30 percent decrease in misarticulation and articulation errors was exceeded. The pretest errors of 126 fell to 60 upon post-testing. The difference of 66 fewer errors

demonstrated a 52 percent decrease. Furthermore, seven of the 10 target group members met the 30 percent decrease in error criteria. Only three students, C, D, and G failed to do so.

The performance of the three students who failed to meet the criteria was due to similar difficulties. One half of the errors demonstrated on the posttest of student C were the result of words not previously spoken. A review of the treatment procedures revealed that the focus was only on the errors noted on the pretest. An analysis of the posttest data showed that although the number of errors increased from pretest to posttest, so did the number of words spoken. Fifty percent of the posttest errors were derived from words not mentioned at all during the pretest.

Student D also increased his test vocabulary while, at the same time, making new errors. In this case, over sixty-six percent of the errors were attributed to words newly attempted. Student G was also more verbal on the posttest and fifty percent of the posttest errors were drawn from words not previously spoken This was once again the result of an increase in vocabulary, an increase in newly attained vocabulary that still awaited correction. Thus students C, D, and G now all have a greater command of spoken language since the twelve week treatment period.

The total number of misarticulations on the pretests of the total target group was 126. Sixty misarticulations were found on the posttests for a group result of a 52 percent decrease in individual articulation errors. Twenty

misarticulations were found on the posttests derived from words previously spoken correctly. Twenty articulation errors were identified on the posttests taken from words not previously spoken on the pretests.

Table 2

Objective 2: Over a Period of 12 Weeks, the Target Group Would Demonstrate a 20% Improvement in Communication Using Speech As Measured Through the Observations of the Classroom Teachers

Student	Pre Q1	Post Q1	Pre Q2	Post Q2	Pre Q3	Post Q3	Pre Overall	Post Overall	Percent Increase/Decrease
A	2	2	5	4	5	5	12	11-	08% decrease
B	2	3	2	3	1	2	05	08+	60% increase
C	3	4	4	3	2	3	09	10+	11% increase
D	3	4	2	3	1	3	06	10+	67% increase
E	1	2	2	3	0	1	03	06+	100% increase
F	1	2	1	2	1	3	03	07+	133% increase
G	3	4	3	4	3	4	09	12+	33% increase
H	1	3	2	4	1	2	04	09+	125% increase
I	2	3	2	3	2	4	06	10+	67% increase
J	3	4	3	4	3	3	09	11+	22% increase
					Total		66	94	42% increase

The second objective was of demonstrating a 20% improvement in communication using speech. The results drawn from the first three questions of the Speech Research Survey were analyzed. The final outcomes of these questions were compared between the pre- and posttests. All survey questions were answered on a scale of 0 to 5 with 5 holding the highest value.

The group pretest mean or average was 66. The posttest of 94 revealed a 42 percent increase in communication as measured on the first three questions of

the Speech Research Survey. This was in excess of the 20 percent criteria and was actually over twice the amount of improvement predicted.

An inspection of Table Number 2 further revealed that all but two of the target group students exceeded the 20 percent objective for improvement in their spoken communication. Only students A and C did not meet the objective. It must be remembered that all of these results were based upon information taken from three separate questions.

Student A was the subject who completed (spoke) the highest number of responses in the pretest. Prior to the treatment period, this was the subject with the most abundant vocabulary. Consequently, there was less chance for this student to improve. While it was true that the classroom teacher found no change in the clarity of this student's speech, this may have been due to higher expectations for this student on the part of the classroom teacher. The frequency of use of speech was perceived by the classroom teacher to decrease. This student might have reached the limit in the amount of practice possible. The music time now included practice previously confined to the regular classroom time. There was no room for improvement in the use of spontaneous speech. This student began the study with the highest score possible on this Speech Research Survey and thus had no way of showing improvement on the posttest for this question.

Student C improved the clarity of speech by 20 percent and increased spontaneous speech by 20 percent. It was only in the frequency of speech that this student decreased by 20 percent instead of the predicted increase. It appeared that

this particular student had a threshold of the amount of speech used. This was fulfilled in the music sessions instead of in the regular classroom. Therefore, the student fulfilled the 20 percent criteria in two thirds of the questions forming the overall improvement in communication.

Table 3

Objective 3: Over a Period of 12 Weeks, the Target Group Would Demonstrate an Increase in Self-confidence as Indicated by Item Four of the Same Speech Research Survey

Student	Pretest	Posttest	Increase/Decrease
A	3	4	+1
B	1	2	+1
C	3	4	+1
D	1	2	+1
E	1	2	+1
F	3	4	+1
G	3	4	+1
H	2	3	+1
I	1	3	+2
J	2	4	+2
Total	20	32	+12

The third objective identified an increase in self-confidence as exhibited by standing/sitting straighter and using frequent eye contact. That was assessed using the fourth question of the Speech Research Survey as answered by the classroom teachers. The assessments were also presented as pre- and posttests.

The reader is directed to consider the wording of objective number three. No specific gain was predicted due to two considerations, both of which will be

explained in the final chapter. Because of the directionality of the results, there is a considerable degree of positiveness. Not only did each student improve (ten out of ten), but also the pretest to posttest increase was a solid 60 percent.

Objective three concerned the level of confidence that was measured in terms of the body postures (standing/sitting straighter and using more frequent eye contact) of each student. This was used as a determining factor because the concept of self-confidence was an abstract one beyond the intellectual capabilities of these profoundly mentally handicapped students. Due to the impossibility of self-assessments, results depended upon observations by teachers of the behaviors. Eight students increased their behaviors by 20 percent. Two students increased their behaviors by 40 percent. The overall increase in self-confidence was 60 percent as perceived and reported by the classroom teachers.

It was thus demonstrated that all of the three objectives were successfully fulfilled. The use of this form of melodic intonation therapy was successful with these profoundly mentally handicapped students. The articulation skills of these students improved and along with these improvements the self-confidence grew. With the decrease in misarticulations, the students' use of speech would have improved.

CHAPTER V

Recommendations

This study focused on the improvement of the speech of profoundly mentally handicapped students. The assessment instrument used to determine articulation errors was a well-established instrument in the field of speech therapy. The Speech Research Survey was a teacher-made instrument.

The final question of the Survey deals with inferences. A single question provides questionable validity in the results of the objective. Even dividing the question into components results in only two. Many of these students are in wheelchairs. Hence the observation of posture while standing or sitting is dependent upon the student being ambulatory or wheelchair bound. Whether an individual makes eye contact is easily divided into a separate question.

As previously stated, the concept of self-confidence is too abstract for the profoundly mentally handicapped student to understand. The assessment thus is difficult to report. The responses to this question reflect the opinions of classroom teachers. These opinions may not be free from the contamination of teachers' empathy and determination to see what progress no matter how small. This is evidenced during the weeks of treatment when teachers enthusiastically discussed any observed improvements. In reenacting this research, this particular objective would need to be assessed using as many unobtrusive indicators as possible.

The recommendation is to proceed with this study during a longer period of time. Twelve weeks of treatment is a short time period to learn new skills and forget old habits. The mentally handicapped and particularly those in the profound range learn much more slowly than the normal population. To learn any task, this population must have more repetitions and practices; and must have more reinforcements than the normal population of the same age group.

It must be remembered that in addition to a lower intelligence level, these students have physiological and behavioral difficulties not in evidence in other populations. Even with persistence and a strong intent to learn there are limits to the promptness with which learning can occur. Twelve weeks may not be the optimum length of time for every student.

Another recommendation is the revision of the music classroom schedule. This would be done to bring all of the subjects together in one class for once a week. It would give the teacher a chance to focus simply on language skills for the entire session. During the second session the students could return to their usual homeroom class. This session could then allow a chance to practice the skills in the more natural music setting.

Another recommendation is that this study be reenacted in regular classrooms. In this case, a special language intensive class could be formed of all students joining in the study. This would also be a once a week class or subgrouping for the purpose of focusing only on language skills. The skills could then be practiced in the other natural classroom sessions.

In order to facilitate this reenactment, in-service training would be provided for the regular classroom teachers. This in-service would include an initial lesson on articulation and the possible errors that might be seen in this population. Also presented would be an explanation of the assessment instrument especially testing procedures. The music teacher would then work as a team teacher with the regular classroom teachers.

In this team teaching approach, both teachers would be responsible for the assessment of the students' speech. The regular teacher would assess the individual students and the music teacher would review the results. Thus both teachers would be able to work on the specific articulation errors. The weekly class or subgrouping would be the primary responsibility of the music teacher. The regular classroom teachers would then be responsible for the practice of articulation skills throughout the rest of the week. A similar in-service and team teaching situation is presently being developed at the research site.

In conclusion, this is a study worth repeating with the same population. The suggested modifications remove the question of validity on the objective assessing self-confidence while continuing to pursue the goal of the improvement of speech in the profoundly mentally handicapped. Further investigation is definitely warranted.

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APPENDIXES

APPENDIX A

Speech Research Survey

SPEECH RESEARCH SURVEY

Student _____

Please circle the number that best represents the student's assessment level with 5 being the strongest to 0 for not shown.

1. What is the clarity of the student's speech ?

5 4 3 2 1 0

2. How often does the student use spoken responses?

5 4 3 2 1 0

3. How often has spontaneous speech has been noted ?

5 4 3 2 1 0

4. What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?

5 4 3 2 1 0

If you wish further information on the results of this research or survey, please sign here.

_____

APPENDIX B

Articulation Treatment Data Sheet

ARTICULATION TREATMENT DATA SHEET

Student_____ Teacher_____

Week Number	Objectives	Level
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

APPENDIX C

Compilation of Raw Data

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Student A
Sub-test of the Goldman-Fristoe Test of Articulation

Pretest		**Posttest**	
Final g omitted	Initial k omitted	Initial f substituted p	Medial f substituted p
Initial f substituted b	Initial d omitted	Initial j omitted	Initial sh substituted d
Final d omitted	Medial sh omitted	Medial tsh substituted t	Medial shz
Final sh omitted	Initial tsh substituted t	Initial v substituted b	Medial s substituted p
Final tsh substituted t	Final l omitted	Final z omitted	Initial voiced th substituted dt
Initial r substituted w	Medial r substituted w	Blend bl	Blend br substituted bl
Final r substituted w	Medial voiceless th omitted	Blend fl substituted pl	Blend kr substituted br
Final voiceless th omitted	Initial v substituted b	Blend st substituted t	
Medial v substituted w	Final v omitted		
Medial s substituted p	Final s omitted		
Medial z substituted s	Medial voiced th substituted w		
Blend kr substituted kw	Blend sl substituted s		
Blend tr substituted tw			

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	2	2
How often does the student use spoken responses?	5	4
How often has spontaneous speech been noted?	5	5
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	3	4

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student B

Pretest	**Posttest**
Medial p substituted d	Initial k substituted t
Medial m omitted	Initial f substituted p
Medial b substituted d	Final f omitted
Initial g substituted d	Final tsh omitted
Final k omitted	
Initial f omitted	
Final f omitted	
Medial d substituted w	
Final d omitted	
Initial sh substituted dj	
Final sh omitted	
Medial tsh substituted j	
Final tsh omitted	
Initial r substituted d	
Initial voiceless th substituted t	
Medial voiceless th omitted	
Initial v substituted d	
Final v omitted	
Initial s substituted d	
Medial s substituted d	
Final s omitted	
Final z omitted	
Initial voiced th substituted d	
Blend kr substituted k	
Blend sl substituted d	

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	2	3
How often does the student use spoken responses?	2	3
How often has spontaneous speech been noted?	1	2
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	1	2

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student C

Pretest	Posttest
Final n omitted	Medial p omitted
Initial w substituted f	Final f omitted
Medial b substituted d	Initial d substituted g
Final b omitted	Medial d substituted n
Initial g substituted c	Final d omitted
Final k omitted	Final t omitted
Initial t omitted	Initial tsh substituted d
Final t omitted	Final tsh substituted d
Final tsh omitted	Medial r substituted rw
Initial l substituted d	Medial voiceless th omitted
Medial l omitted	Final v omitted
Medial s omitted	Medial s substituted sv
Final s omitted	Final z omitted
Blend bl substituted b	Blend bl substituted b
Blend pl substituted p	Blend fl substituted f
	Blend pl substituted p

Speech Research Survey Results

Survey Questions	Pretest	Posttest
What is the clarity of the student's speech?	3	4
How often does the student use spoken responses?	4	3
How often has spontaneous speech been noted?	2	3
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	3	4

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student D

Pretest	Posttest
Medial m omitted	Medial m omitted
Initial v substituted b	Final n omitted
Final s omitted	Initial t omitted
Blend st substituted t	

Speech Research Survey Results

Survey Questions	Pretest	Posttest
What is the clarity of the student's speech?	3	4
How often does the student use spoken responses?	2	3
How often has spontaneous speech been noted?	1	3
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	1	2

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student E

Pretest	Posttest
Final p omitted	Final z omitted
Medial b severely distorted	
Final f omitted	
Medial d omitted	
Final t omitted	
Medial sh substituted s	
Initial tsh mildly distorted	
Medial tsh omitted	
Final tsh mildly distorted	
Final voiceless th omitted	
Final z omitted	

Speech Research Survey Results

Survey Questions	Pretest	Posttest
What is the clarity of the student's speech?	1	2
How often does the student use spoken responses?	2	3
How often has spontaneous speech been noted?	0	1
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	1	2

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student F

Pretest	Posttest
Medial b omitted	Medial m omitted
Final d omitted	Medial k omitted
Medial ng substituted n	Final k omitted
Initial t omitted	Initial f omitted
Medial t omitted	Final t omitted
Final t omitted	Final tsh omitted
Initial sh substituted b	
Final sh omitted	
Final l omitted	
Initial dj substituted b	
Medial voiceless th omitted	
Final s omitted	

Speech Research Survey Results

Survey Questions	Pretest	Posttest
What is the clarity of the student's speech?	1	2
How often does the student use spoken responses?	1	2
How often has spontaneous speech been noted?	1	3
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	3	4

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student G

Pretest	**Posttest**
Final m addition of s	Medial g omitted
Final ng substitute e	Initial v substituted w
Initial t omitted	Final z omitted
Medial voiceless th omitted	Blend skw substituted kw
Final z omitted	

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	3	4
How often does the student use spoken responses?	3	4
How often has spontaneous speech been noted?	3	4
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	3	4

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student H

Pretest	**Posttest**
Final g omitted	Medial dj substituted g
Medial sh omitted	Blend bl substituted b
Final sh omitted	
Medial dj substituted k	
Medial s omitted	
Final s omitted	
Initial z substituted k	
Final z omitted	

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	1	3
How often does the student use spoken responses?	2	4
How often has spontaneous speech been noted?	1	2
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	2	3

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student I

Pretest	**Posttest**
Initial t omitted	Initial f substituted s
Final t omitted	Medial sh substituted t
Final tsh omitted	Initial v substituted c
Final l omitted	Initial t omitted
Initial v omitted	
Medial v substituted d	
Final v omitted	
Medial voiced th substituted v	
Blend dr substituted dd	

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	2	3
How often does the student use spoken responses?	3	3
How often has spontaneous speech been noted?	2	4
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	1	3

Compilation of Raw Data

Misarticulations as noted on the Sounds-In-Words Subtest of the Goldman-Fristoe Test of Articulation

Student J

Pretest	**Posttest**
Initial w substituted ahw	Initial f substituted p
Final g omitted	Final dj omitted
Final t omitted	Final s omitted
Final sh omitted	Final z omitted
Initial r substituted w	Blend sl substituted esl
Initial dj substituted sh	
Final voiceless the substituted t	
Final v omitted	
Final z omitted	
Blend kl omitted	
Blend kr substituted kw	
Blend tr substituted tw	

Speech Research Survey Results

Survey Questions	**Pretest**	**Posttest**
What is the clarity of the student's speech?	3	4
How often does the student use spoken responses?	3	4
How often has spontaneous speech been noted?	3	3
What is the level of self-confidence as exhibited by standing/sitting straighter and using frequent eye contact?	2	4

APPENDIX D

Parent Permission Form

NEVA KING COOPER EDUCATION CENTER
151 NW 5th Street, Homestead, Fl 33030
(305) 247-4307

To the parents/caretakers of_____:

Hello,

My name is Ginny Detzner and, as most of you know, I am the music teacher/music therapist at Neva King Cooper Educational Center. In my efforts to keep current with educational information, I am presently attending Nova Southeastern University to pursue a master's degree in the education of the mentally handicapped. As a part of these studies I must complete an educational research project.

My intent is to encourage each student involved in the study to speak more clearly. As I already see every student at the school, this will only mean a slight change in my classes during the school day. The materials used will include the same musical instruments and stereo equipment which I have previously used. For the purpose of research only, I may need to make audio and/or video recordings. I am therefore asking your permission to make these recordings. These recordings will only be used in the classroom.

I,_____, give permission to record this student.

_____Please put a mark here if you wish further information.

Thanks for your cooperation.